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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/714,292 | 11/17/2000 | Takatoshi Yamanaka | 1080.1084 (JDH) | 4924 |

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|---|---|
| EDWARDS, PATRICK L | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2624 | |

DATE MAILED: 08/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/714,292 | YAMANAKA ET AL. | |
| | Examiner | Art Unit | |
| | Patrick L. Edwards | 2624 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *30 June 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1,2 and 4-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2 and 4-16* is/are rejected.

7)☒ Claim(s) *1,2, 4-14, and 16* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

1. The response received on 06-30-2006 has been placed in the file and was considered by the examiner. An action on the merits follows.

### *Claim Objections – 37 CFR 1.75*

2. The follow quotations of 37 CFR § 1.75(a) and (d)(1) provide the basis of objection:

> (a) The specification must conclude with a claim particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention or discovery.

3. Claims 1, 2, and 4-14, and 16 are objected to under 37 CFR § 1.75(a) and (d)(1) as failing to particularly point out and distinctly claim the subject matter which the applicant regards as his invention or discovery.

The language of the newly amended claims 1, 2, and 16 is unclear as currently recited. The respective claims recite:

> *said image processing condition storing section stores a frequency emphasis function indicating a degree of frequency emphasis in which a gradation conversion function and an average density around respective points of the medical image are used as variables in accordance with the type of the imaging device and target*

This excerpt is just not clearly written and it is therefore unclear what conditions are being stored in the image processing condition storing section. The examiner will assume that the gradation conversion function and the average density are the variables or "conditions" being stored by the image processing condition storing section.

Claims 4-14 are objected to because of a dependency on an objected-to claim.

### *Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 2, 5-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Ogawa (USPN 6,577,753) and Ogura (USPN 6,502,984).

**Regarding independent claim 1**:

The framework of the claim consists of 3 main elements:

1. **Data Obtaining Section**:
   The data obtaining section obtains the radiation image, and identifies the imaging device[1] and the target.[2]
2. **Image processing condition storing section**:
   The image processing condition storing section stores [in image tables] processes associated with [at least one of] various imaging devices and targets.
3. **Image processing section**:
   The image processing section uses the image processing conditions[3] to subject the radiation image[4] to image processing.

Ogawa discloses this framework:

Ogawa discloses a data obtaining section [Ogawa col. 4 lines 13-50: The reference describes obtaining a radiation image (such as a CR apparatus, for example). The reference further describes a selection means 22 for identifying the type of photography device.]

Ogawa discloses the image processing condition storing section [Ogawa col. 4 lines 43-65: The reference describes LUT's (i.e. image tables) that provide an image processing condition associated with the type of the apparatus.]

Ogawa discloses an image processing section [Ogawa col. 4 lines 43-65: The reference describes reading a processing condition from the LUT's and subjecting the radiation image to image processing (i.e. the reference describes applying tone correction).]

The details of the claim:

The claim further recites that the image processing section performs the processes of gradation conversion processing and frequency emphasis processing. Ogawa does not expressly disclose this specific type of processing, but Ogura does.

Ogura et al. discloses that the image processing section subjects the medical image obtained by said data obtaining section to at least a gradation conversion processing and a frequency emphasis processing (see column 15, lines 49-54: The reference describes that the image process means 73 subjects the image to processing including gradation correction and frequency emphasis.).

It has already been established that the image processing section retrieves the processing conditions from the process condition storing section. The image processing section performs gradation conversion processing and frequency emphasis processing. Thus, the image processing condition storing section must store conditions for performing these image processes. These conditions are recited in the penultimate paragraph. The image

[1] The imaging device, of course, is used to obtain the radiation image
[2] The target, of course, corresponds to where the radiation image was obtained.
[3] The conditions are, of course, retrieved form the image process condition storing section.

processing condition storing section stores a gradation conversion function and an average density around points of the medical image.

Ogura discloses a place to store the conditions that are used in the image processing operation (see Ogura Fig. 29 and the image process condition determining means 75). As was discussed above, Ogura also discloses gradation conversion and frequency emphasis processing. A gradation conversion processing inherently requires a gradation conversion function, so that element is taught by Ogura. Also, using an average density in an image processing operation such as gradation conversion or frequency emphasis is well known in the art (official notice). And so it would have been obvious to store this conditio in the condition storing section to use in the image processing section.

With respect to the final limitation that "gradation conversion processing and frequency emphasis processing are performed differently for different imaging devices," this limitation is also met by the combination of Ogawa and Ogura. Ogawa discloses performing processing differently depending on the type of image device. Combining this with the Ogura's disclosure of gradation conversion and frequency emphasis processing, and we get a system that performs these two process differently for different imaging devices and different targets.

Regarding independent claims 2, 15, and 16:

Regarding claim 2, the above analysis is incorporated herein. The above combination also reads on claim 2 because the medical imaging devices in Ogawa also qualify as "photography" devices for purposes of the claim.

Regarding claims 15 and 16, a method and image processing program are taught by the combination of Ogawa and Ogura.

Regarding dependent claims:

Regarding claim 5, Ogawa discloses an image processing condition operating section to add, to change, and to delete said image processing condition in response to an operation (Ogawa col. 5 lines 7-15: The reference describes changing the image processing condition in response to an operation such as the changing of the input apparatus.).

Regarding claim 6, Ogawa discloses an image display section to display the medical image subjected to the image processing by said image processing section (see Fig. 2).

Regarding claim 14, Ogawa obtains a radiation image as the medical image (see Ogawa generally).

Regarding claim 7, which is representative of claim 8, Ogura et al. discloses an interested area designating section to designate an area of interest on the medical image displayed in said image display section in response to an operation, wherein said image display section lowers a luminance of an area, excluding the area of interest designated by said interested area designating section, to display the medical image (see Fig. 32: From this figure it

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[4] This radiation image is, of course, retrieved from the data obtaining section.

can be seen that a designated area of the medical image B1 has been displayed and that the luminance of an area excluding the area of interest B1 has been lowered as can be seen by area B2.).

It would have been obvious to one reasonably skilled in the art at the time of the invention to modify the Ogawa display to include an interested area designation section as taught by Ogura. Such a modification would have allowed for a way to more clearly display parts of the medical image.

With regard to claim 9, which is representative of claim 10, Ogura et al. discloses a part recognizing section to recognize positions of a plurality of parts appearing in the medical image, wherein said image processing section subjects the area of interest, designated by said interested area designating section, to the image processing in accordance with a respective one of the plurality of parts appearing in the area of interest, and being among the plurality of parts having positions thereof which are recognized by said part recognizing section (see column 17, lines 9-27: The reference describes that photograph portion determining means (i.e. parts recognizing means) that determines a part based on a comparison with template parts (i.e. a plurality of parts).).

It would have been obvious to one reasonably skilled in the art at the time of the invention to modify the Ogawa disclosure by recognizing certain parts of the image as taught by Ogura. Such a modification would have allowed for would have allowed for each party to be processed more specifically and thus displayed more clearly.

With regard to claim 11, which is representative of claims 12 and 13, Ogura et al. discloses a scanning processing designating section to designate, in response to an operation, a scanning processing to set an area of interest on the medical image displayed in said image display section and to move the area of interest in a predetermined direction, wherein said image display section displays, in accordance with the scanning processing by said scanning processing designating section, the medical image in which the area of interest successively moves, and a luminance of an area, excluding the area of interest, is lowered (see column 16, lines 42-54: The reference describes a movable aperture stop (i.e. a scanning processing designating section) for determining an irradiated region B1 (i.e. designating a scanning processing of setting the area of interest on the medical image displayed in said image display section). This aperture stop can be moved to any region of interest that is desired.).

It would have been obvious to one reasonably skilled in the art at the time of the invention to modify Ogawa's image processing steps by scanning only an area of interest as taught by Ogura. Such a modification would have allowed for a more precise method of processing certain aspects of the image.

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Ogawa (USPN 6,577,753), Ogura et al. (U.S. Patent No. 6,502,984 B2) and Ogura (U.S. Patent No. 6,314,198 B1). The arguments as to the relevance of Ogawa and Ogura et al as applied above are incorporated herein.

Claim 4 calls for the image processing section to subject the medical image obtained by the data obtaining section to a luminance correction processing using a dynamic range compression function in which the average density around the respective points of the medical image is used as the variable. Although Ogura et al. discloses a variety of image processing techniques such as gradation correction and frequency emphasis, the reference does not disclose the use of luminance correction processing. However, Ogura, in the same field of endeavor of image

processing and the same problem solving area of radiation images discloses the use of luminance correction processing (see column 36, lines 20-30: The reference describes a luminance correction processing using a dynamic range compression processing function which uses the average density as a factor.).
It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Ogura et al. by adding the luminance correction processing as taught in Ogura because this type of processing allows the "optimum image processing for the radiographic, digital image without troubling the operator".

*Conclusion*

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick L Edwards whose telephone number is (571) 272-7390. The examiner can normally be reached on 8:30am - 5:00pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on (571) 272-7453. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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